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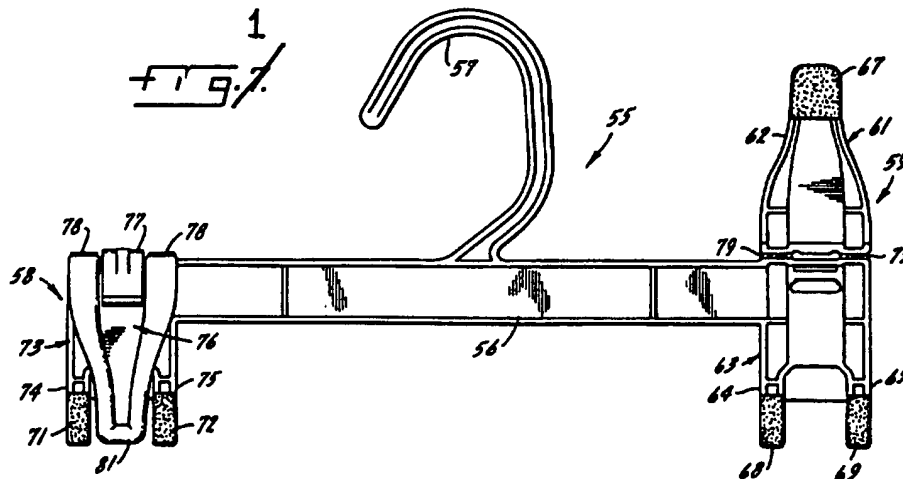
## (54) Clamp type garment hanger with resilient friction pads

(57) A clamp type clothing hanger with the usual hook 57 and cross bar 56, has a pair of clamp assemblies 58,59 one at each end of the cross bar, and is characterised in that:

[a] each clamp comprises front and rear clamp members with an outer surface and an inner clamping surface, the outer surface having a recess 76 to receive a 'U' shaped spring clamp 77 for urging the clamping members together;

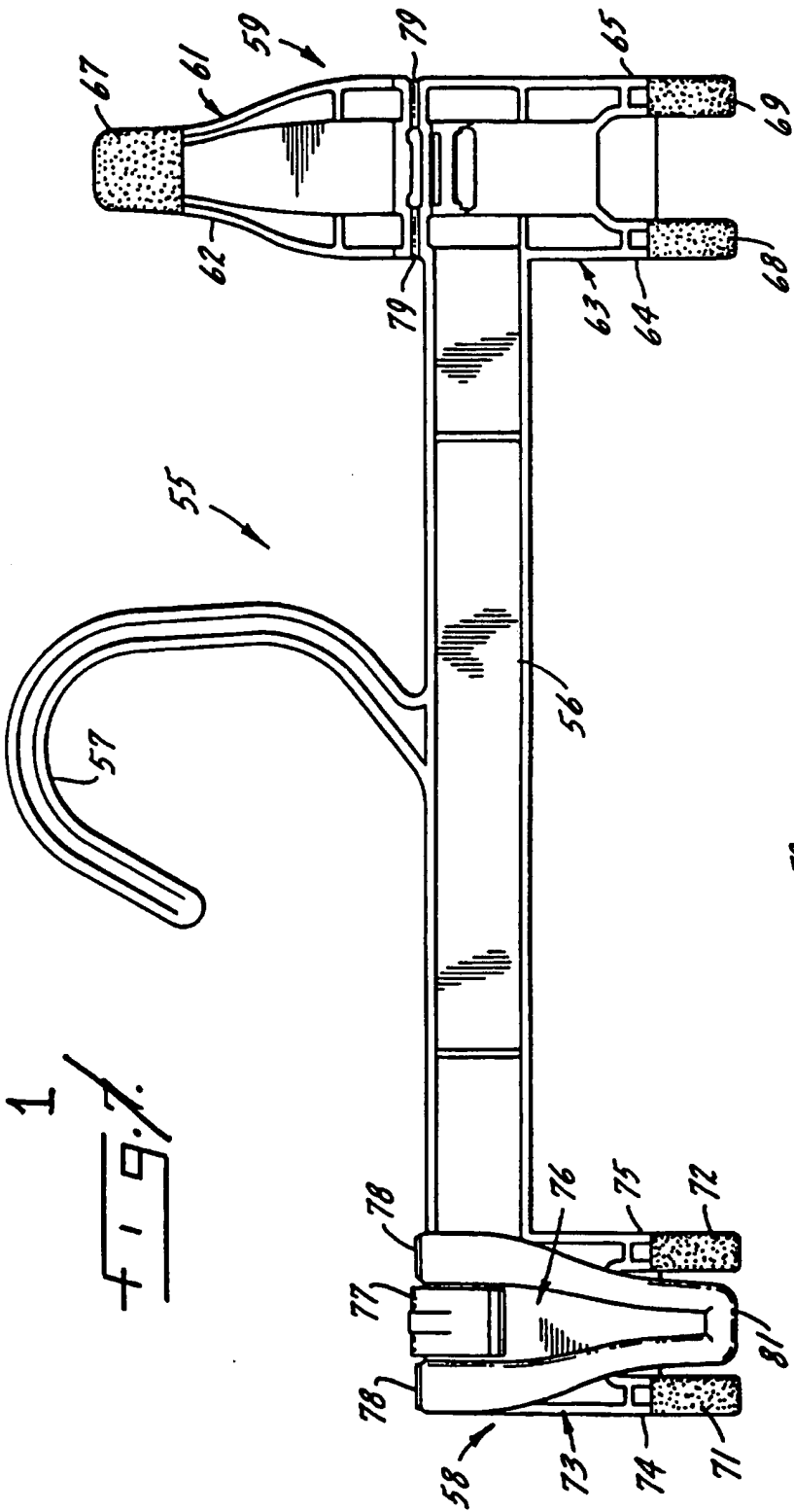
[b] the rear clamping member comprises two laterally spaced downwardly extending fingers 74,75 and the front comprises a single downwardly extending finger 81, the latter lying opposite the space between the former;

[c] each inner clamping surface includes at least one resilient friction pad 67,71,72 fixed to it and comprising a block copolymer with discrete styrene monomer units and rubber monomer units.



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FIG. 1



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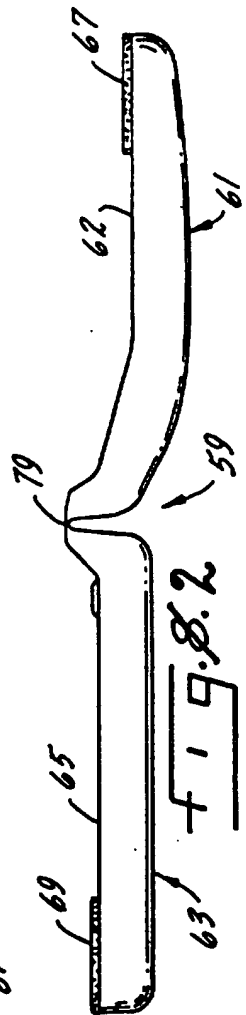
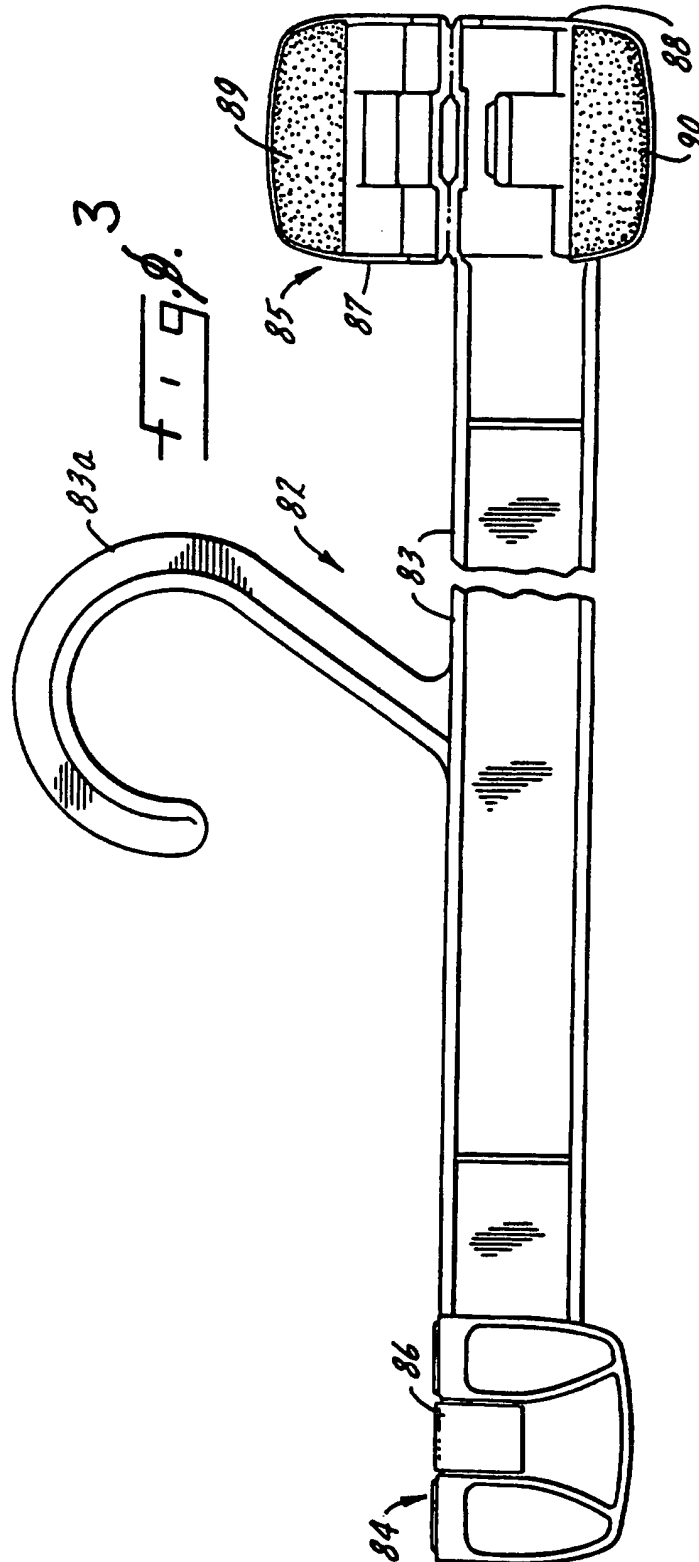


FIG. 2



**HANGERS WITH LONG LASTING NON-SLIP SURFACES**

This<sup>o</sup> invention relates generally to clamp-type garment hangers with clamp assemblies that include non-slip surfaces for positively gripping garments. Specifically, this invention relates to clamp-type garment hangers wherein the garment gripping pads are made of resilient friction material for positively gripping the garments.

**BACKGROUND OF THE INVENTION**

A common problem associated with today's clamp-type garment hangers is that the garments slip through the clamp assemblies, or clamps, and fall to the floor with unacceptable frequency. This problem is particularly annoying to a consumer who places a relatively expensive and fragile garment, such as a pair of dress slacks or a skirt, on a clamp-type garment hanger. The slacks or skirt often slip through the clamp assemblies and fall to the floor thereby becoming wrinkled and requiring ironing or dry cleaning.

In order to avoid this situation, manufacturers of clamp-type garment hangers have designed clamp assemblies with rough or sharp edges to positively grip the garment. However, clamp assemblies with rough garment-engaging surfaces have the potential of damaging delicate materials such as silk or linen through extended use. One particular problem is associated with clamp assemblies that employ outwardly protruding nipple-like projections or cleats. The nipple-like projections leave indentations in the cuffs of slacks and the waist-bands of skirts. Removal of these indentations normally requires ironing or dry cleaning, or the consumer may have to wear the garment due to inadequate time to remove the indentations.

The above-mentioned shortcomings are not only annoying to the consumers but to the manufacturers of garments as well. First, a manufacturer cannot tolerate a clamp-type garment hanger that, with unacceptable frequency,

allows the garments to slip through the clamp assemblies and fall to the floor. Manufacturers of garments often ship their expensive garments already hung on clamp-type garment hangers. The garments will wrinkle or become damaged if they fall off the hangers during transit. By the same token, retailers are very particular about product presentation and will not tolerate garment hangers that permit garments to fall onto the floor. Further, neither manufacturers nor retailers can tolerate clamp-type garment hangers that employ rough clamping surfaces or nipped clamping surfaces because such designs have the potential to damage fragile or expensive garments, or at least, mar the appearance thereby detracting from the sales appeal to the purchaser.

Hence, there is a need for a new clamp-type garment hanger that meets the aforementioned criteria. Specifically, the clamp assemblies must positively grip the garment without either marking or adhering to the garment fabric. Further, because the hanger must be capable of use as a shipping hanger by clothing manufacturers, the clamp assembly must be able to maintain its gripping ability under a wide range of temperatures and rough handling resulting from the shocks and bumps to which such hangers are exposed during shipment. It is highly desirable to produce a clamp assembly with a clamping surface that is both smooth to the touch and has the ability to positively grip the garments for an extended period of time. A clamping surface that is smooth to the touch is pleasing to the consumer and assures the consumer that the clamping surface will not damage the garment.

A clamp-type garment hanger that meets the aforementioned criteria must also be competitive from a cost-to-produce basis. Specifically, dissimilar components of the clamp-type garment hanger must easily bond to one another. Second, the improved clamping surface must be comprised of competitively priced, yet readily accessible materials.

This invention provides a solution to all of the abovementioned problems and satisfies all of the above criteria. An improved clamping surface including resilient pads made of the family of resilient friction materials identified below provides positive gripping action for lightweight and heavyweight garments alike. The clamping surface provides excellent gripping ability in both cold and hot environments. The resilient pads are smooth to the touch and do not mark the garments. Finally, they adhere to conventional plastic clamp-type garment hangers.

#### BRIEF DESCRIPTION OF THE INVENTION

With the above considerations in view, the present invention is directed to an improved clamp-type garment hanger comprising hang means, a cross-bar having two ends with the hang means extending upwardly from a central area of the cross-bar for suspending the garment hanger from a support location, and garment-suspending means including two clamp assemblies, one clamp assembly located at each end of the cross-bar for securing a pant or skirt to the garment hanger with each clamp assembly including a front clamping member and a rear clamping member, wherein :

(a) each of the front and rear clamping members includes an outer surface and an inner clamping surface with each of the outer surfaces of the front and rear clamping members including a recessed channel for accommodating a U-shaped clamp, the U-shaped clamp resiliently urging the front and rear clamping members into a garment-clamping position;

(b) the rear clamping member includes two downwardly-extending fingers and is an integral extension of the cross-bar, being stationary with respect to the cross-bar, the two downwardly-extending fingers being laterally spaced from one another;

(c) the front clamping member includes one downwardly-extending finger which is so aligned as to fall in

between the two downwardly-extending fingers of the respective rear clamping member in the garment-clamping position;

(d) each downwardly-extending finger includes an inner clamping surface with at least one inner clamping surface including at least one resilient pad fabricated from resilient friction material, a first side of the resilient pad being secured to and carried by the inner clamping surface of one of the downwardly extending fingers, and a second side of the resilient pad being presented for contact with a garment to be hung from the hanger; and

(e) the resilient friction material comprises a block copolymer having discreet block segments of styrene monomer units and rubber monomer units, the co-efficient of friction of the second side of the resilient pad being sufficiently high to preclude movement under the weight of the garment when a normal clamping force is applied to the two clamping members to move them into clamping position.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated diagrammatically in the accompanying drawings, wherein :

Figure 1 is a front elevation of one embodiment of a clamp-type garment hanger made in accordance with this invention;

Figure 2 is a side view of the right clamp assembly in an open position of the clamp-type garment hanger illustrated in Figure 1; and

Figure 3 is a front elevation of another embodiment of a clamp-type garment hanger made in accordance with this invention with the right clamp assembly in an open position.

DETAILED DESCRIPTION OF THE INVENTION

Like reference numerals will be used to refer to like or similar parts from Figure to Figure in the following description of the drawing.

5 Figure 1 illustrates a clamp-type garment hanger 55 made in accordance with the present invention. The garment hanger 55 features a cross-bar 56 with a hang means, in this case a hook 57, attached at about the middle of the cross-bar 56. Two clamp assemblies 58 and 59 are located on  
10 either end of the cross-bar 56. The right clamp assembly 59 illustrates the clamping mechanism of this design in the open position. The front clamping member, indicated generally at 61, includes a single downwardly-extending finger 62. The rear clamping member, indicated generally at  
15 63 includes two downwardly-extending fingers 64 and 65. The garment engaging surfaces of the right clamp assembly 59 are shown at 67, 68, and 69.

Two garment-engaging surfaces 71 and 72 of the left rear clamping member 73 are shown carried by their  
20 respective downwardly-extending fingers 74 and 75. The garment-engaging surface of the left front clamping member 76 is not shown. The front clamping members 61 and 76 are biased toward the garment clamping position by U-shaped clamps, only one of which is shown on the left at 77.

25 The hinge mechanism of this design, shown generally at 78 and 79 is commonly referred to as a "living" hinge, meaning the right clamp assembly 59, which includes front clamping member 61, rear clamping Member 63 and hinge 79, and left clamp assembly 58, which includes front  
30 clamping member 76, rear clamping member 73 and hinge 78 are all moulded as one piece of plastic. In the case of the hangers illustrated in Figures 1-3, the hooks, cross-bars and clamping members are all-moulded together and each hanger incorporates "living hinges" in the clamping  
35 mechanisms.

Figure 2 illustrates the coatings of the resilient friction material 67 and 69 as applied to the front inner



clamping surface of the finger 62 and the rear inner  
clamping surface of the finger 65 respectively, The Coating  
of resilient material 68 on the finger 64 is not shown in  
Figure 2 but is identical. A thin coat of resilient  
friction material is applied to both sets of front  
downwardly-protruding fingers 62 and 81 and both sets of  
rear downwardly-protruding fingers 64, 65 and 74, 75. The  
resilient material is applied to the fingers in a molten  
state shortly after the hanger is moulded and while the  
fingers are still hot, thereby eliminating the need for glue  
or adhesive.

Figure 3 illustrates another embodiment of a  
clamp-type garment hanger 82 made in accordance with the  
present invention. The hanger 82 incorporates a cross-bar  
83 and a hang means, such as a hook 84 attached at about the  
middle of the cross-bar 83. Two clamp assembly assemblies  
84 and 85 are fixably attached at either end of cross-bar  
83. The right clamp assembly 85 illustrates a clamp  
assembly in the open position. The left clamp assembly 84  
illustrates a clamp assembly in the closed position.

A U-shaped clamp, identical to the one shown at  
86, biases the right front clamping member 87 and right rear  
clamping member 88 into the garment-clamping position.  
Resilient friction material is carried by the front clamping  
member 87 and the rear clamping member 88 in the form of  
resilient pads 89 and 90 respectively. The molten resilient  
friction material used to form resilient pads 89 and 90 are  
applied to the inner clamping surfaces 87 and 88 when the  
moulded plastic comprising the surfaces 87 and 88 is still  
hot, thereby eliminating the need for glue or adhesive. The  
manner in which resilient pads 89, 90 are attached to the  
garment clamping members 87, 88 is structurally analogous to  
the method shown in Figure 2.

The resilient friction materials best suited for  
fictionally engaging a garment placed in between two pads  
are block copolymers having discreet block segments of  
styrene monomer units and rubber monomer units. These

materials have the common quality of providing a high co-efficient of friction with slippery clothing materials such as silk, rayon, polyester and linen. This family of block copolymers generally breaks down into two types; polymers which include unsaturated rubber monomer units and polymers which include saturated rubber monomer units.

Specific examples of polymers employing unsaturated rubber monomer units include a structure which is linear in nature (A-BA type). These polymers include styrene-butadiene-styrene (S-B-S) and styrene-isoprene-styrene (S-I-S).

The other subcategory of acceptable resilient frictional materials incorporates saturated rubber monomer units. Those compounds include linear styrene-ethylene/butylene-styrene (S-EB-S). In addition to the linear (A-B-A) polymers, there are specialised polymers of the radial (A-B)<sub>n</sub> type. Those polymers include (styrene-butadiene)<sub>n</sub>, (S-B)<sub>n</sub>, or (styrene-isoprene)<sub>n</sub>, (S-I)<sub>n</sub>. Further, polymers of the diblock (A-B) type have been found acceptable. Those polymers include styrene-butadiene (S-B), styrene-ethylene/propylene (S-EP), and styrene-ethylene/butylene (S-EB). Each block segment of the above-mentioned polymers may be 100 monomer units or more.

The preferred resilient friction materials discussed are commercially available from the Shell Chemical company of Woodstock, Illinois. Specific grades of the preferred resilient materials that are usable are G-2706, G-7705, D-3226 and D-2109.

Although preferred embodiments of the present invention have been illustrated and described, it will at once be apparent to those skilled in the art that variations may be made within the spirit and scope of the invention. Accordingly, it is intended that the scope of the invention be limited solely by the scope of the hereafter appended claims and not by the specific words in the foregoing description.

CLAIMS

1. An improved clamp-type garment hanger comprising hang means, a cross-bar having two ends with the hang means extending upwardly from a central area of the cross-bar for suspending the garment hanger from a support location, and garment-suspending means including two clamp assemblies, one clamp assembly located at each end of the cross-bar for securing a pant or skirt to the garment hanger with each clamp assembly including a front clamping member and a rear clamping member, wherein :
- (a) each of the front and rear clamping members includes an outer surface and an inner clamping surface with each of the outer surfaces of the front and rear clamping members including a recessed channel for accommodating a U-shaped clamp, the U-shaped clamp resiliently urging the front and rear clamping members into a garment-clamping position;
  - (b) the rear clamping member includes two downwardly-extending fingers and is an integral extension of the cross-bar, being stationary with respect to the cross-bar, the two downwardly-extending fingers being laterally spaced from one another;
  - (c) the front clamping member includes one downwardly-extending finger which is so aligned as to fall in between the two downwardly-extending fingers of the respective rear clamping member in the garment-clamping position;
  - (d) each downwardly-extending finger includes an inner clamping surface with at least one inner clamping surface including at least one resilient pad fabricated from resilient friction material, a first side of the resilient pad being secured to and carried by the inner clamping surface of one of the downwardly extending fingers, and a second side of the resilient pad being presented for

contact with a garment to be hung from the hanger;  
and

- (e) the resilient friction material comprises a block copolymer having discreet block segments of styrene monomer units and rubber monomer units, the co-efficient of friction of the second side of the resilient pad being sufficiently high to preclude movement under the weight of the garment when a normal clamping force is applied to the two clamping members to move them into clamping position.

2. The improved clamp-type garment hanger of claim 1, wherein the resilient material is applied to the respective fingers in a molten state, thereby eliminating the need for glue or adhesive.

3. The improved clamp-type garment hanger of claim 2, wherein the hanger is moulded and has the resilient material applied to the respective fingers while the fingers are still hot from the moulding step.

4. The improved clamp-type garment hanger of any preceding claim, wherein the block copolymer has a linear styrene-rubber-styrene structure.

5. The improved clamp-type garment hanger of any one of claims 1 to 3, wherein the block copolymer has a radial (styrene-rubber)<sub>n</sub> structure.

6. The improved clamp-type garment hanger of any one of claims 1 to 3, wherein the block copolymer has a diblock (styrene-rubber) structure.

7. The improved clamp-type garment hanger of anyone of claims 1 to 3, wherein the rubber monomer unit is butadiene, isoprene, ethylene/butylene or ethylene/propylene.

8. The improved clamp-type garment hanger of any one of claims 1 to 3, wherein each inner clamping surface includes resilient pads.

5 9. The improved clamp-type garment hanger of any one of claims 1 to 3, wherein each downwardly-extending finger including a plurality of resilient pads.

10. The improved clamp-type garment hanger of any preceding claim substantially as described with reference to Figure 1, Figure 2 or Figure 3 of the accompanying drawings.



# The Patent Office

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Application No: GB 9607666.6  
Claims searched: 1-10

Examiner: John Wilson  
Date of search: 30 April 1996

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): A4L[L121]

Int Cl (Ed.6): A47G 25/26 25/48

Other:

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	EP0412670A2      Batts - note col.3 ll.38-42, col.5 l.34 to col.6 l.6	1-8
Y	US4826056      Batts - see the figs., showing that the two finger/one finger arrangement is known	1-8

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.